Price Park Surface Water Improvement Project

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Department of Engineering & Economic Development

City of North Canton Ohio

in partnership with

OhioEPA

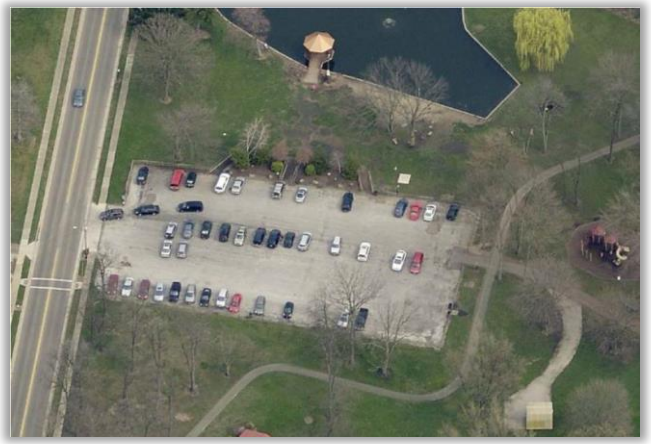
Agenda

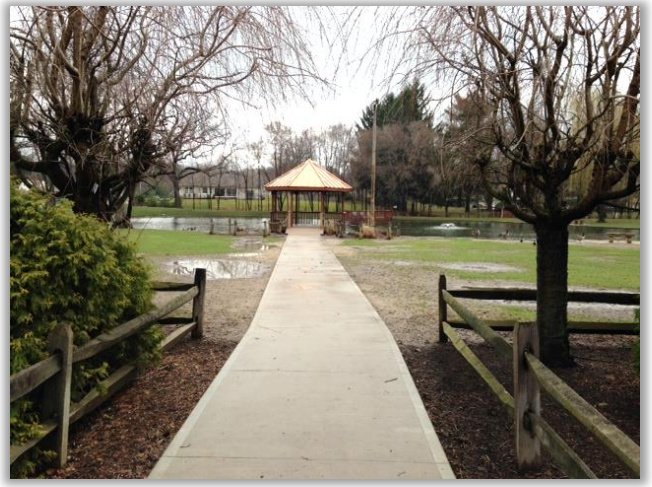
- Project Overview
- Permeable Pavers
- Bio-retention Cells
- Project Timeline
- Project Outreach & Education

This project or publication was financed in part or totally through a grant from the Ohio Environmental Protection Agency under the provisions of the Surface Water Improvement Fund.

Price Park Surface Water Improvement Project Overview

- East parking lot at Price Park in need of storm water improvements and resurfacing
  - Current storm water runoff drains towards walking path and playground area and toward the duck and fishing pond
  - Contamination potential from surface runoff
- Opportunity for City to demonstrate innovative approach to storm water management
  - Permeable pavers
  - Bio-retention cells
- City awarded $115K grant from Ohio Environmental Protection Agency to implement project
  - Total project budget: $185K





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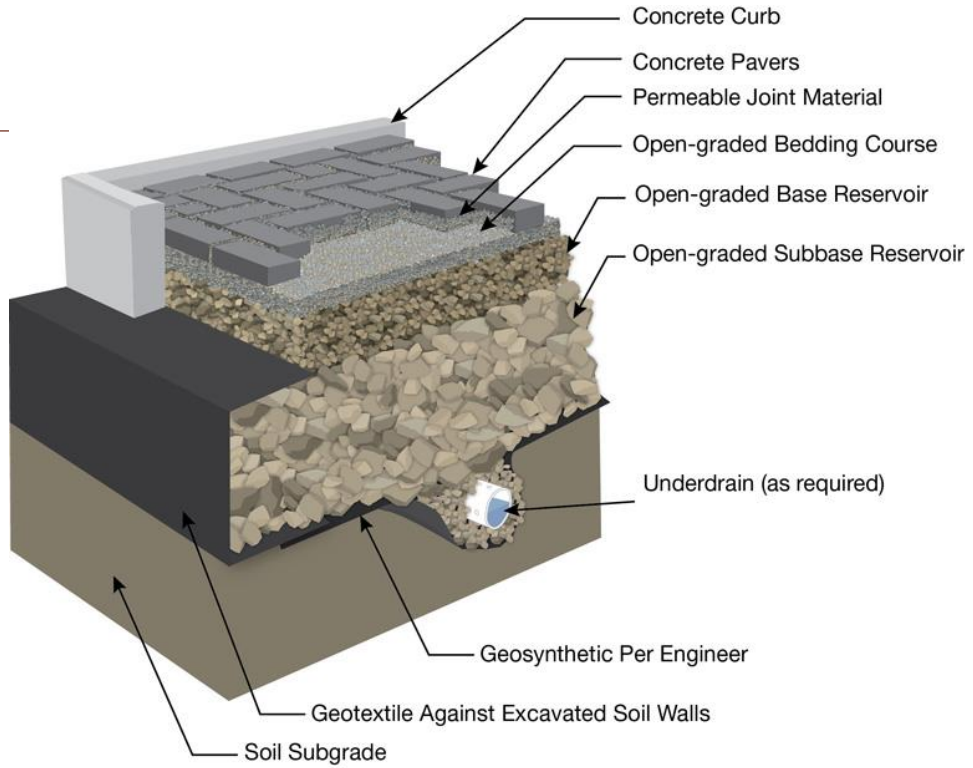
Permeable Pavers

- Interlocking concrete pavers separated by joints filled with small stones
- Water enters joints and flows through base and subbase
- Reduces runoff, traps suspended solids, and filters pollutants from water
- Perimeter of parking to be covered with permeable pavers (10,720 sq ft)
- Interior parking lot surface will be pitched to drain runoff across the permeable pavers



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Permeable Pavers Operation & Maintenance

- Mechanical installation, traffic ready upon installation
- Joints will need periodic (bi-annual) cleaning to ensure permeability
  - Typically, using vacuum-sweeping street cleaning machine
  - Early monitoring will help establish regular cleaning schedule
- Pavers resistant to freeze-thaw cycle and de-icing salt
  - Water in base layers does not freeze and heave pavers
  - Snow melts faster, drains immediately
  - No special snow plow or plow blades needed
  - Individual pavers units can be replaced if damaged

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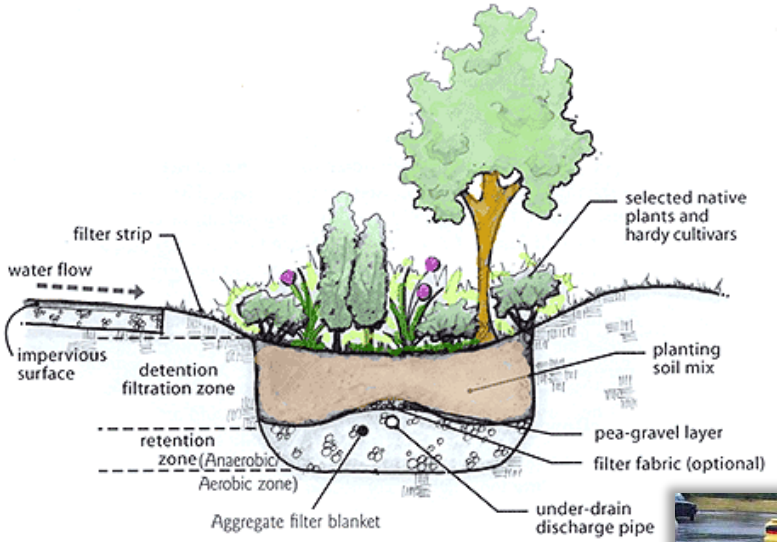
Bio-Retention Cells

- Landscaping feature to capture, store, and treat stormwater runoff from parking lot
- Bio-retention cell allows runoff to temporarily pond and eventually infiltrate through the soil or evapotranspiration
- Infiltration process removes pollutants such as oil, grease, leaked vehicle fluids, sediments, and heavy metals
- Underdrain captures infiltrated water and discharges it to downstream sewer system
  - Alleviates immediate pressure on storm water drainage
  - Prevents long-term ponding
- Bio-Retention Cells to be installed at southern end of parking lot



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Bio-Retention Cells Operation & Maintenance

- Plants should be inspected bi-annually
- Mulch replacement recommended when erosion is evident or to beautify site
  - Entire site may require mulch replacement every 2-3 years
- Soil will need to be tested and treated for acidity resulting from acidic runoff
  - Test bi-annually
  - Alkaline product, such as limestone
- Construction costs for bio-retention cell are slightly greater than for landscaping new development
  - Use of bio-retention can decrease/eliminate cost for additional storm water systems needed at site
- O&M costs are comparable to typical landscaping

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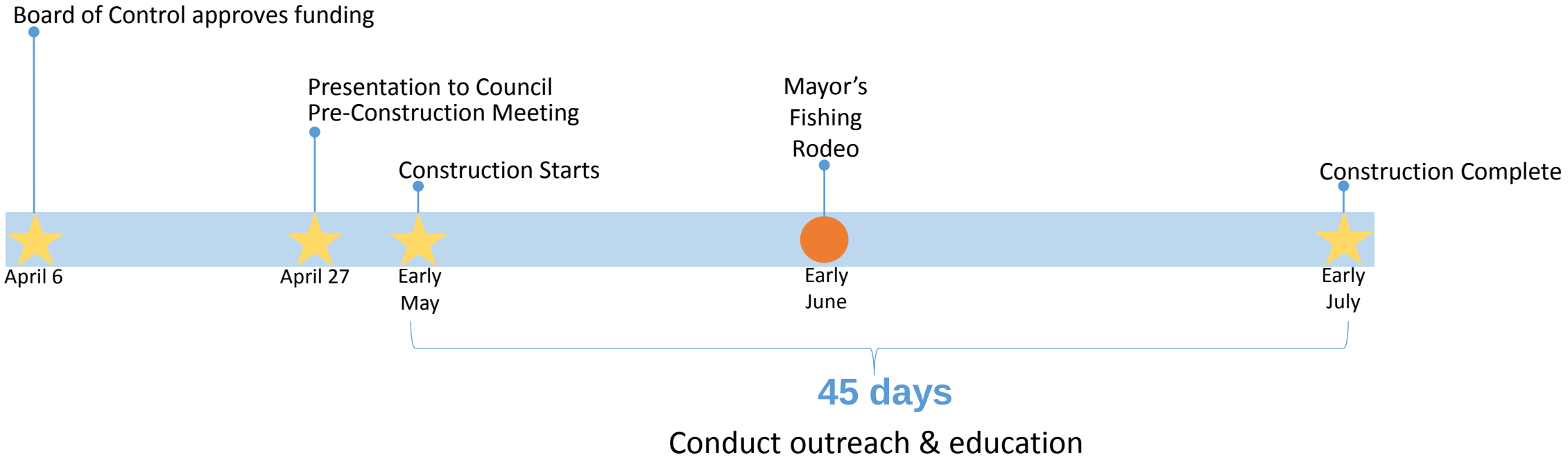
Project Timeline



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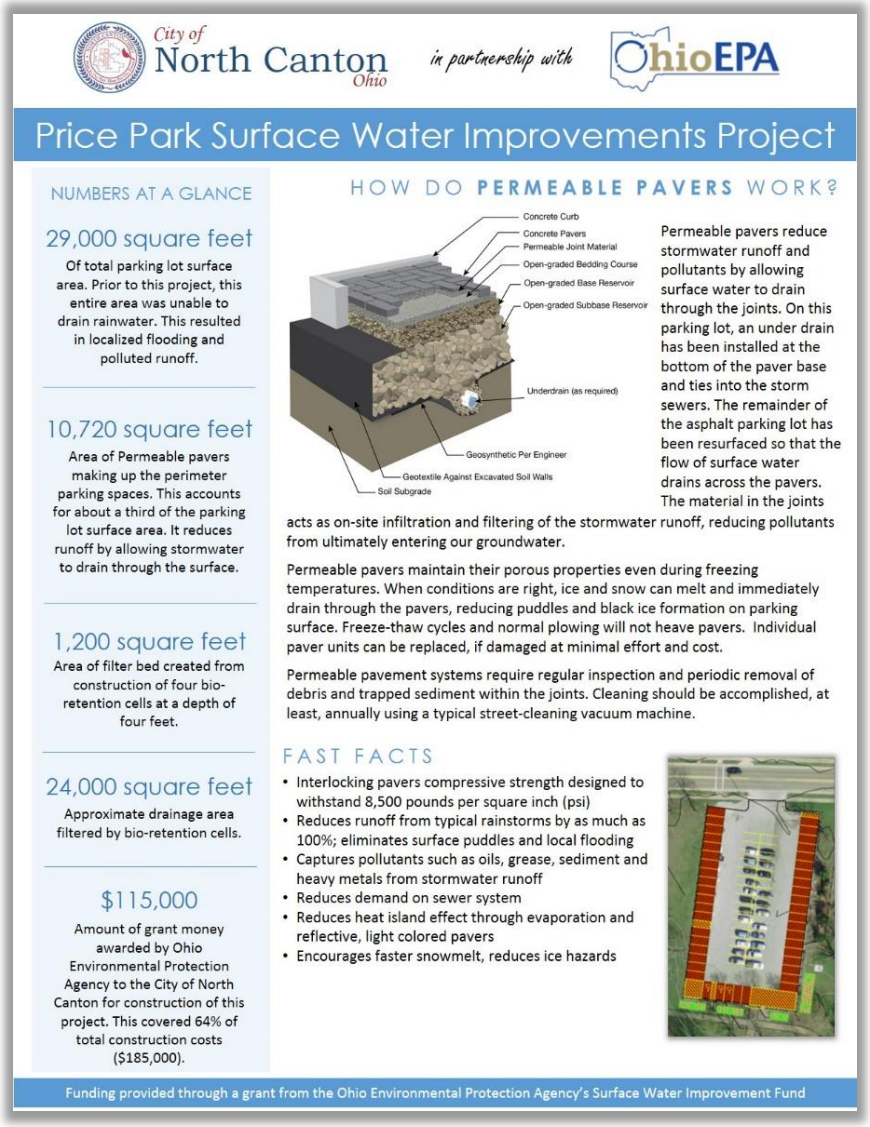
Outreach & Education

- Mayor's Fishing Rodeo
  - Opportunity for publicity
  - Distribute Factsheets
- Hoover High School Project Lead the Way
  - Intro project start (early May)
  - Fall Tour upon completion
- City Website to host "Live" Updates
- Permanent educational sign posted onsite



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Price Park Surface Water Improvements Project

NUMBERS AT A GLANCE

29,000 square feet
Of total parking lot surface area. Prior to this project, this entire area was unable to drain rainwater. This resulted in localized flooding and polluted runoff.

10,720 square feet
Area of Permeable pavers making up the perimeter parking spaces. This accounts for about a third of the parking lot surface area. It reduces runoff by allowing stormwater to drain through the surface.

1,200 square feet
Area of filter bed created from construction of four bio-retention cells at a depth of four feet.

24,000 square feet
Approximate drainage area filtered by bio-retention cells.

$115,000
Amount of grant money awarded by Ohio Environmental Protection Agency to the City of North Canton for construction of this project. This covered 64% of total construction costs ($185,000).

HOW DO PERMEABLE PAVERS WORK?

Permeable pavers reduce stormwater runoff and pollutants by allowing surface water to drain through the joints. On this parking lot, an under drain has been installed at the bottom of the paver base and ties into the storm sewers. The remainder of the asphalt parking lot has been resurfaced so that the flow of surface water drains across the pavers. The material in the joints acts as on-site infiltration and filtering of the stormwater runoff, reducing pollutants from ultimately entering our groundwater.

Permeable pavers maintain their porous properties even during freezing temperatures. When conditions are right, ice and snow can melt and immediately drain through the pavers, reducing puddles and black ice formation on parking surface. Freeze-thaw cycles and normal plowing will not heave pavers. Individual paver units can be replaced, if damaged at minimal effort and cost.

Permeable pavement systems require regular inspection and periodic removal of debris and trapped sediment within the joints. Cleaning should be accomplished, at least, annually using a typical street-cleaning vacuum machine.

FAST FACTS

- Interlocking pavers compressive strength designed to withstand 8,500 pounds per square inch (psi)
- Reduces runoff from typical rainstorms by as much as 100%; eliminates surface puddles and local flooding
- Captures pollutants such as oils, grease, sediment and heavy metals from stormwater runoff
- Reduces demand on sewer system
- Reduces heat island effect through evaporation and reflective, light colored pavers
- Encourages faster snowmelt, reduces ice hazards

Funding provided through a grant from the Ohio Environmental Protection Agency's Surface Water Improvement Fund

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Price Park East Parking Lot After Heavy Rain
(Photos taken 4/8/2015)

Questions? Comments?